

PATENT  
Attorney Docket No. P04666US08

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent application of: COSGROVE, DANIEL J., et al.  
For: PURIFIED PLANT EXPANSIN PROTEINS AND DNA ENCODING SAME,  
the specification of which is being transmitted herewith.

**INFORMATION DISCLOSURE STATEMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Attached are Forms PTO/SB/08A and 08B (formerly Form PTO-1449) listing the relevant art known to the applicant herein. The Examiner is requested to consider the references and make them of record. This application relies, under 35 U.S.C. § 120, on the earlier filing date of prior application Serial No. 09/896,301, filed on June 29, 2001. This application also relies, under 35 U.S.C. § 120, on the earlier filing date of prior application U.S. Serial No. 09/092,160, filed June 5, 1998; U.S. Serial No., 09/429,675, filed October 28, 1999; U.S. Serial No. 08/834,327, filed April 15, 1997; U.S. Serial No. 08/440,517, filed May 12, 1995; U.S. Serial No. 08/242,090, filed May 12, 1994; and U.S. Serial No. 08/060,944, filed on May 12, 1993. Each of the references listed on Forms PTO/SB08A and 08B were submitted to, and/or cited by, the Patent Office in the prior application(s) and, therefore, are not required to be provided in this application.

---

**CERTIFICATE OF MAILING BY EXPRESS MAIL**

I hereby certify that this document and the documents referred to as enclosed therein are being deposited with the U.S. Postal Service in an envelope as "Express Mail Post Office to Addressee" addressed to: Box NEW APP - FEE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, prior to 5:00 p.m. on the 24 day of September, 2003.

*Michelle L. Woods*  
MICHELLE L. WOODS  
Express Mail Label # EV 330572521 US

The filing of this information disclosure statement shall not be construed as a representation that a search has been made (37 C.F.R. § 1.97(g)), an admission that the information cited is, or is considered to be, material to patentability, or that no other material information exists.

The filing of this information disclosure statement shall not be construed as an admission against interest in any manner. (Notice of January 9, 1992, 1135 O.G. 13-25, at 25.)

Respectfully submitted,



HEIDI S. NEBEL, Reg. No. 37,719  
McKEE, VOORHEES & SEASE, P.L.C.  
801 Grand Avenue, Suite 3200  
Des Moines, Iowa 50309-2721  
Phone No. (515) 288-3667  
Fax No. (515) 288-1338  
**CUSTOMER NO: 27407**

- mlw -

Attorneys of Record

Substitute for form 1449A/PTO				<i>Complete if Known</i>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(Use as many sheets as necessary)</i>				Application Number	continuation of 09/896,301
				Filing Date	
				First Named Inventor	Daniel J. Cosgrove
				Group Art Unit	1652
				Examiner Name	Saidha, T
				Attorney Docket Number	P04666US8
Sheet	1	of	3		

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

\*EXAMINER: Initial if reference considered whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449A/PTO				<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(Use as many sheets as necessary)</i>					
Sheet	2	of	3	Application Number	continuation of 09/896,301
				Filing Date	
				First Named Inventor	Daniel J. Cosgrove
				Group Art Unit	1652
				Examiner Name	Saidha, T.
				Attorney Docket Number	P04666US8

<b>OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS</b>		
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	1	Bayer, E.A., et al., Current Opinion in Structural-Biology 8:548-557 (1998)
	2	Broadwater, et al., "Zea ml, the maize homolog of the allergen-encoding Lol pl gene of rye grass", Gene. 131:227-230 (1993)
	3	Cleland, R.E., Planta 170:379-385 (1987)
	4	Cosgrove, D.J. et al. "Group I allergens of grass pollen as cell wall-loosening agents", Proc. Natl. Acad. Sci. USA 94:6559-6564 (1997)
	5	Cosgrove, et al., "Role of expansin in cell enlargement of oat coleoptiles", Plant Physiol. 103:1321-1328 (1993)
	6	Cosgrove, "Characterization of long-term extension of isolated cell walls from growing cucumber hypocotyls", Planta vol. 177:121-130 (1989)
	7	Crowell, "Cytokinin regulation of a soybean pollen allergen gene", Plant Mol. Bio. 25:829-835 (1994)
	8	Deutscher, M.P., Academic Press 1990, Guide to Protein Purification, pp. 174-193
	9	Esch, et al., "Identification and Localization of Allergenic Determinants on Grass Group I Antigens Using Monoclonal Antibodies", J. Imm. 142(1):179-184 (1989)
	10	Fry, Stephen C., Current Biology 4(9):815-817 (1994)
	11	Fry, Stephen C., Physiologia Plantarum, 75:532-536 (1989)
	12	Griffith, et al., "Cloning and sequencing of Lol, pl, the major allergenic protein of rye-grass pollen", FEBS 09407, vol 279(2):210-215 (1991)
	13	Heslop-Harrison, et al., "The pollen-stigma interaction in the grasses", Acta Bot. Neerl. 34(2):193-211 (1985)
	14	Heslop-Harrison, et al., "The pollen-stigma interaction in the grasses", Acta Bot. Neerl. 33(1):81-99 (1984)
	15	Knox, et al., "Environmental and molecular biology of pollen allergens", Trends in Plant Science, Vol 1(5) 156-164 (1996)
	16	Knox, et al., "Pollen allergens: development and function", Sex Plant Report 9:318-323 (1996)
	17	Li, Z-C et al., Planta 191:349-356 (1993)
	18	McQueen-Mason et al., "Disruption of hydrogen bonding between plant cell wall polymers by proteins that induce wall extension", Proc. Natl. Acad. Sci. USA, 9:6574-6578 (1994)
	19	McQueen-Mason et al., "Expansin Mode of Action on Cell Walls", Plant Physiol. 107:87-100 (1995)
	20	McQueen-Mason et al., Planta 190:327-331 (1993)
	21	McQueen-Mason et al., "Two endogenous proteins that induce cell wall extension in plants", The Plant Cell 4:1425-1433 (1992)
	22	Merriam-Webster's Collegiate Dictionary, tenth ed., pp. 1236, 1027
	23	Nishitani, K. and Tominaga R., J. Biol. Chem 267(29):21058-21064 (1992)
	24	Patel, Praful, in "Biotechnology Applications and Research", eds., Cheremisinoff, P.N. and Ouellette, R.P. pp. 534-562, Technomic Publishing Company, Inc., Lancaster, PA, (1985)
	25	Perez, et al., "cDNA cloning and immunological characterization of the rye grass allergen Lol p I", J. of Biol. Chem., vol 265(27):16210-16215 (1990)

Substitute for form 1449A/PTO				<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>					
<i>(Use as many sheets as necessary)</i>					
Sheet	3	of	3	Attorney Docket Number	P04666US8

<b>OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS (CONTINUED)</b>					
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.			T <sup>2</sup>
	26	Padlan, "Immunoglobulin fold", Encyclopedia of Immunology, Academic Press, Harcourt Brace Jovahovich, Publishers, pp. 827-833			
	27	Scopes, R.K., Chapter 3, Protein Purification, Principles and Practice, 2 <sup>nd</sup> Ed., pp. 41-54, Springer-Verlag, New York (1987)			
	28	Shcherban, T.Y. et al., "Molecular cloning and sequence analysis of expansins -- a highly conserved, multigene family of proteins that mediate cell wall extension in plants", Proc. Nat. Acad. Sci USA 92:9245-9249 (1995)			
	29	Sinnott, Botany Principles and Problems, 2 <sup>nd</sup> Ed., fifth impression, McGraw-Hil Book Co., Inc., New York and London 1929, p. 417 "The Spermatophyta".			
	30	Smith, et al., "Molecular Characterization of Group I Allergens of Grass Pollen, Pollen Biot. Chapter 7, pp: 124-143			
	31	Staff, et al., "Cellular Localization of Water Soluble, Allergenic Proteins in Rye-Grass (Lolium perenne) Pollen using monoclonal and Specific IgE antibodies with immunogold probes", Histochemical J., Vol. 22:276-290 (1990)			
	32	Taiz, L. Proc. Natl. Acad. Sci. USA 91:7387-7389 (1994)			
	33	Taiz, L., Ann. Rev. Plant Physiol. 35:585-657 (1984)			
	34	Wu, et al., "Growth maintenance of the maize primary root at low water potentials involves increases in cell-wall extension properties, expansin activity, and wall susceptibility to expansins", Plant Physiol. 111:765-772 (1996)			

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

\*EXAMINER: Initial if reference considered whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.